

REMARKS

Reconsideration and further examination of the subject patent application in light of the present Amendment and Remarks is respectfully requested. Claims 1-13 are currently pending in the application and stand rejected under a final rejection. New dependent claims 14-20 have been added, which are similar to pending dependent claims 2-12.

As a preliminary matter, applicants' attorney wishes to thank the Examiner for the courtesy extended to the undersigned during an Examiner's interview on March 31, 2003. Applicants' attorney would like to reiterate that the discussion focused on the removeably nature of the matrix and the circular shape of the cells comprising the matrix, which may lead to allowance of the claims.

Rejection Under 35 U.S.C. §112

Claim 4 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, as set forth in paragraph 1 of the Office Action. In view of claim 4 as presently amended, applicants respectfully traverse this rejection. Claim 4 has been amended to point out that even though the matrix may be molded within the recess during a molding process, it is still non-destructively removeable, as is also recited in independent claim 1, and supported in the specification.

Rejection Under 35 U.S.C. §103

Claims 1-10 and 13 stand rejected under 35 U.S.C. §103 as being unpatentable over Ver Deutsche Metallwerke AG ("Ver Deutsche") in view of Carbone, as set forth in paragraph 4 of the Office Action. In view of the claims as presently amended, applicants respectfully traverse this rejection.

The Ver Deutsche Reference

The Examiner relies on Ver Deutsche as the primary reference in his rejection of the claims, and asserts that Ver Deutsche discloses an elongated beam, foam portion, fascia, a recess in the foam, and a metallic cylindrical cell matrix disposed in the recess, which matrix is removeably secured within the recess. The Examiner then states that Carbone teaches a cylindrical cell matrix made of plastic, and that it would have been obvious for one of ordinary skill to provide the fascia in Ver Deutsche with the foam matrix of Carbone to arrive at applicants' claimed invention.

Ver Deutsche is not directed to a bumper having a non-metallic matrix, is not directed to a cylindrical or circular cell matrix, is not directed to a bumper having a releasably replaceable matrix, and is not concerned with the weight of the bumper. In fact, Ver Deutsche teaches away from applicants' claimed invention in that it discloses a metallic (aluminum) matrix, and further, such metallic matrix is composed of hexagonal or "honeycomb" shaped cells. This is vastly different than applicants' invention for several significant reasons, as set forth below.

First, the shape of the individual cells is important. Circular cells have uniform stress distribution profiles, and are extremely strong with respect to absorbing energy from a crash without crushing. In contrast, the honeycomb cellular configuration of Ver Deutsche is structurally weaker than applicants' circular cell configuration because the honeycomb cells, or any polygon cell structure, have corners that create high-stress areas upon impact. Such high-stress areas tend to cause the entire structure to buckle when subject to sufficient impact force. On the other hand, applicants' circular cell matrix absorbs stress uniformly and distributes such stress evenly through out the structure, and thus exhibits superior strength.

Second, if the honeycomb cells in Ver Deutsche are damaged, the entire bumper must be

replaced. Because the honeycomb cell structure is fully encapsulated within the foam, as clearly shown in the figures, it cannot be removed and replaced. Cutting the foam, as suggested by the Examiner, is not a viable alternative because the structural integrity of the bumper is destroyed and the bumper cannot be pieced together after it is cut. Thus, it cannot be repaired.

In contrast, in applicants' claimed invention, the recess in which the circular cell matrix is housed abuts the bumper beam and is not surrounded by foam on all sides. Rather, it is partially encapsulated and surrounded by foam on only three sides. The fourth side abuts the bumper beam. If damage to the circular cell matrix should occur, the bumper can be disassembled to expose the recess, and the matrix can be removed and replaced. As set forth in specification, "the cylindrical cell matrix 214 may be replaced upon disassembly of the bumper system 200." (page 12, lines 26-28). This implicates significant cost saving over the Ver Deutsche bumper system.

Third, cost and weight are major considerations in vehicle bumper manufacturing. Applicants' non-metallic circular cell matrix is lighter than Ver Deutsche's metal honeycomb structure. Additionally, as set forth in applicants' prior response dated December 19, 2002, because Ver Deutsche uses a structure made of metal, which acts like a knife to cut through the foam under impact, a metal face plate 7 must be used in front of the honeycomb structure. The face plate adds considerable weight to the bumper assembly. In 1969 when Ver Deutsche was filed, weight was not a consideration in designing a vehicle, and hence a bumper. Thus, Ver Deutsche had no concern whatsoever regarding the weight of the bumper.

Fourth, the entire bumper in Ver Deutsche is filled with the honeycomb structure, making it fairly heavy and expensive. This may be referred to as a "fully-filled core" type bumper. Applicants' circular cell matrix is of course, not only lighter than metal, but such matrices are only used in

selected areas of the bumper, that is, the matrix sections do not fill the entire bumper. Rather, they are located only at selected positions.

Thus, the problems addressed by Ver Deutsche are unrelated to the problems addressed by applicants. Applicants' claimed invention addresses the need for a light weight bumper that can be repaired when damaged, and which exhibits superior strength characteristics. Ver Deutsche is totally unconcerned with weight considerations and repair of the bumper.

The Carbone Reference

Carbone is primarily concerned with shock absorbing properties at all points along the bumper, which is why the internal core comprise the entire bumper. Like Ver Deutsche, the internal core of the bumper fills the entire volume of the bumper and thus is also considered to be a "fully-filled core" type bumper. Also, like Ver Deutsche, the core has a honeycomb configuration, rather than a circular cell matrix.

Again, in the pre-oil embargo days of 1971 when Carbone was filed, weight was not a consideration, and thus, the relatively heavy honeycomb core fills the entire bumper. Although Carbone discloses that the honeycomb core may be made of hard paper, plastic, or metal, such as aluminum, no preference is stated. This further indicates that the choice of materials is unimportant and that weight is not a consideration.

Further, because the honeycomb core of Carbone is essentially the entire bumper, the core cannot be repaired if damaged. There are no core portions that are replaceable or removeable nor is the core divided into separate areas or sections that can be releasably removed, as is the case with applicants' claimed invention. If the Carbone bumper is damaged, the entire bumper must be replaced, which is an expensive proposition.

Not only must the entire bumper be replaced if the honeycomb core is damaged, but like Ver Deutsche, the honeycomb core is structurally inferior to applicants' circular cell matrix due to its corners that promote high-stress areas, and may incur damage more easily than applicants' claimed invention.

Accordingly, Carbone, like Ver Deutsche, does not address, and has little concern for the problems solved by applicants' claimed invention, namely a bumper that is light in weight, that has a removeably replaceable matrix portion, and that includes a circular cell matrix for superior strength characteristics.

The Combination of Ver Deutsche and Carbone

In light of the above explanation regarding the Ver Deutsche and Carbone references, the combination set forth by the Examiner is now addressed.

As set forth above, the Examiner uses Ver Deutsche as the primary reference. Applicants submit that an inventor starting with the Ver Deutsche reference in hand would not be able to arrive at applicants' claimed invention. Ver Deutsche does not teach or suggest a circular cell matrix, and does not concern use of a removeably replaceable matrix portion. The Ver Deutsche bumper is merely a large metal honeycomb fully encased in foam. Nothing about such a bumper relates to removeable sections to facilitate repairs or to reducing the weight of such bumpers, not to mention applicants' significant feature of using a circular cell structure.

One skilled in the art of vehicle bumper construction looking for a way to develop a light-weight, easy repairable bumper with high strength characteristics superior to known bumpers would have no reason to consult the Ver Deutsche reference. Why would such an inventor look to a reference that discloses a non-repairable "fully-filled core" type bumper using a metal honeycomb

core, which reference essentially teaches away from all of the important considerations appreciated by applicants. He or she would not do so.

The Examiner then applies Carbone asserting that it teaches encapsulating a cylindrical cell matrix made of plastic or metal, and states that it would be obvious to one of ordinary skill to provide in Ver Deutsche the plastic matrix taught by Carbone as a known alternative. First, as set forth above in detail, applicants note that Carbone does not teach a cylindrical cell matrix. Rather, Carbone merely teaches a honeycomb structure, as does Ver Deutsche. Thus, there is no teaching or suggestion in either reference to use a circular cell matrix, as both cited references teach a honeycomb structure.

Further, there is no teaching or suggestion in either reference to provide a bumper that has removeably replaceable matrix portions that permit the bumper to be repaired if damaged. Rather, the bumpers in both Ver Deutsche and Carbone teach a bumper having a “fully-filled” core where the core fills the entire volume of the bumper, which core cannot be removed, replaced, or repaired. Once it is damaged, the entire bumper must be scrapped.

As the Examiner is aware, it is impermissible to combine the teaching of prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. In re Fritch, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). The Examiner cannot pick and choose features from the prior art to recreate the claimed invention in hindsight without some teaching or suggestion in the references to support use of the particular claimed combination. Smithkline Diagnostics Inc., v. Helena Laboratories Corp., 8 U.S.P.Q.2d 1468, 1475 (Fed. Cir. 1988).

In the subject case, even if features from the two cited references could be picked, chosen, and combined, such a combination would not yield applicants’ claimed invention. Where would the concept of the circular cell matrix come from, and how would the removeably replaceable portions be

introduced? Clearly, neither of the cited references can supply the missing features. Accordingly, neither Ver Deutsche nor Carbone, taken individually or in combination, teach or suggest applicants' claimed invention. Therefore, applicants submit that independent claims 1 and 13 are not unpatentable over Ver Deutsche and Carbone, and that the dependent claims are also allowable as depending from allowable base claims, respectively.

Closing Remarks


For the foregoing reasons, applicants submit that the subject application is in condition for allowance and earnestly solicit an early Notice of Allowance. Should the Examiner be of the opinion that a telephone conference would expedite prosecution of the subject application, the Examiner is respectfully requested to call the undersigned at the below-listed number.

The Commissioner is hereby authorized to charge any additional fee which may be required for this application under 37 C.F.R. §§ 1.16-1.18, including but not limited to the issue fee, or credit any overpayment, to Deposit Account No. 23-0920. Should no proper amount be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 23-0920. A duplicate copy of this sheet(s) is enclosed.

Respectfully submitted,

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